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Author: M. P. Anstey

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Abstract: One of Functional Grammar's (FG) most important features is the so-called LAYERED STRUCTURE OF THE CLAUSE (LSC). The LSC is used as both a descriptive and explanatory construct, dividing the linguistic world into various hierarchically related layers, such as predicate, predication, and proposition layers. But problems with the LSC eventually led to the development of Functional Discourse Grammar, which divides FG's unitary LSC into two layers, the Interpersonal and Representational and also adds a third, Syntactic Layer, a long-standing desideratum for FG. Nevertheless, the present article argues that there are several problems remaining in FDG's LSC, namely, the place of operators and satellites, the use of a quasi-predicate logic notation, and the insertion of lexemes as parts-of-speech in the Representational Layer. Moreover, the third of these problems relates to a deeper issue, which concerns the understanding of what SEMANTICS refers to in FDG. Specifically, should it refer only those interpersonal/representational distinctions that are relevant to syntax, or should it embrace conceptualisation more broadly and refer to the speaker's intended meaning? Through a consideration of MULTIFUNCTIONALITY, the latter, broader definition of conceptually-relevant semantics is deemed superior, because multifunctionality requires a prising apart of the one-to-one function-to-form bond between semantics and syntax implicit in FDG. It is suggested that a reinterpretation of FDG along the lines of Construction Grammar offers a way of accounting for such multifunctionality satisfactorily.

Author Address: manstey@csu.edu.au

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Functional Discourse Grammar – Multifunctional Problems and Constructional Solutions

Matthew P. Anstey
Australian Research Council Postdoctoral Fellow
Charles Sturt University, School of Theology, Canberra

1. Introduction[1]

One of Functional Grammar's (FG) distinctive features is its extensive use of the so-called LAYERED STRUCTURE OF THE CLAUSE (LSC). The LSC is used as both a descriptive and explanatory construct, dividing the linguistic world into various hierarchically related layers, such as predicate, predication, and proposition layers (Dik 1997a, b) or interpersonal, representational, and structural layers (Hengeveld 2004a). Since Hengeveld (1989), the principle of layering has come to permeate the entire grammatical model. Rijkhoff (2002), for instance, explores the application of layering to the noun phrase across languages, noting the parallelism in this regard between the layering of terms and predicates.

The LSC of FG received a fair amount of criticism since its first appearance in Hengeveld (1989; see Anstey 2004 for its precursors), which eventually led to a new version of FG, Functional Discourse Grammar (FDG; Butler 2003: 63–117; Anstey 2004; Hengeveld 2004a; Mackenzie and Gómez-González 2004; Hengeveld and Mackenzie 2006, fc). FDG divides the LSC of FG into two layers, the interpersonal and representational. FDG also adds an explicit syntactic layer, a long-standing desideratum for FG.

Nevertheless, the present article argues that there are still problems in the LSC that remain in the reworked interpersonal and representational layers of FDG. Section 2 builds on the evaluation of FDG in Anstey (2002; 2004) to offer three additional changes to the model. Furthermore, section 2 raises a more basic issue – what should "semantics" actually refer to in FDG? Specifically, should it refer only to those interpersonal/representational distinctions that are relevant to syntax, or should it embrace conceptualisation more broadly and refer to the speaker's intended meaning? Section 3 offers an answer to this question in

light of the phenomenon of MULTIFUNCTIONALITY (cf. Haspelmath 2003 and the references therein; that is, many-to-many function-to-form correspondences) and argues for the latter, broader definition of conceptually-relevant semantics. This results in a prising apart of the implicit one-to-one function-to-form bond between semantics and syntax in FDG, allowing each a greater degree of independence of each. Section 4 suggests that an interpretation of FDG along the lines of Construction Grammar (Croft 2001, 2004; Goldberg 2003) offers a way of accounting for the multifunctionality arising from the interdependence of conceptual semantics and syntax.

2. Functional Discourse Grammar

Despite the advantages of FDG over FG, it is my contention that there remain four interrelated problems with the model, namely, the place of operators and satellites, the use of a quasi-predicate logic notation, the insertion of lexemes as parts-of-speech in the Representation Layer (RL), and, more significantly, the tight one-to-one bonding between the Interpersonal Layer (IL) and RL on one hand and the expression (syntactic, prosodic, etc.) layers on the other (see Butler and Taverniers, *Introduction*, for overview of FDG). Because the fourth problem, the problem of MULTIFUCTIONALITY, requires a substantial rethinking of the model, it will be dealt with in section 3. The remainder of section 2 addresses the first three problems.

2.1 Operators and satellites

Operators and satellites are central to FDG. However, their theoretical status needs to be reconsidered, particularly in that unlike FG, FDG has a distinct syntactic layer. Satellites and operators are expressed at the syntactic level, in lexical and morphophonological ways respectively. This poses two problems: how can they be defined on a purely interpersonal and/or representational basis, and how can their conceptual unity be more explicitly indicated?

A central problem identified in FG was that it suffered from a one-to-one mapping between interpersonal intentions and representational semantics on one hand and syntax on the other (Anstey 2002; 2004). These two must be disentangled into separate non-syntactic and syntactic modules. FDG carries out this separation but the status of operators and satellites after the carve-up is left somewhat vague, as it is not clear exactly what they have scope over.

The problem of defining operators and satellites in FDG can be solved in a straightforward manner (following a reworking of Anstey 2002). I propose to define operators (π) and satellites (σ), together taken as specifiers (ψ), IN TERMS OF THE ONTOLOGICAL DOMAIN TO WHICH THEIR SPECIFICATION RELATES. Notationally, each entity type is indicated by a variable *v* with its specifiers ψ_v, namely, operators π_v and satellites σ_v. The specifiers for events *e* therefore are π_e and σ_e, π_t and σ_t for times, and so forth.[2]

What this precisely means is illustrated below briefly for objects, events, and propositions, and in detail for PREDICATES. The application of this approach to the additional entities of FDG (Move, Act, location, time, etc) is not considered.

In brief, if we consider the specific descriptive features of each RL unit, we observe that the features correspond to prototypical examples of the respective entity type:

(i) Objects, *x*, have features such as shape, size, substance, and object-quantification (Vossen 1997; Rijkhoff 2002). Less typical modifications are also possible. For example, the recently-coined English Nominal prefix *Mc-*, from *McDonalds* fast-food, which specifies that an object/individual is cheap and of low-quality (*McBook*, *McDoctor*, etc.); or the English Nominal irregular plural suffix *-z*, used exclusively in typed English on the Internet to indicate the dubious legal status of an entity (*gamez*, *passwordz*, *filez*, etc.). Such evaluative modifiers are similar to the *quasi-*/*pseudo-*/*counter-*/*para-*/*sorda (< sort of*) type English Nominal prefixes, which all indicate to the addressee that the entity referred to deviates from or contrasts with the prototypical meaning of the uninflected form in some way. From an

interpersonal perspective, there are also various object specifications available, such as honorifics, diminutives used for affection, and so forth. Finally, there are temporal modifiers of objects, such as English *ex-* (*ex-cop*, *ex-wife*).

(ii) Events, *e*, have the features of time of occurrence (tense), frequency of occurrence, and so forth. Because the (non)-occurrence of events is independent of opinion, the features of objective modality are also in this domain.

(iii) Propositions, *p*, are mental constructs: facts, beliefs, hopes, or wishes with respect to the world, real or imaginary. They have features such as attitudes toward the proposition (doubt, disbelief) and the source of the proposition (common knowledge, sensory evidence, inference, hearsay, etc; Hengeveld and Mackenzie fc).

To illustrate this approach further, let us consider the PREDICATE domain in more detail. Predicate specifiers ψ_f specify features of prototypical predicates. A long tradition in linguistics views three features as basic: telicity, dynamicity, and duration – does the predicate include a terminal point or does it last forever (e.g., *to melt* vs. *to be white*); does it change over time or is it static; and does it extend through time? In many languages, these properties are lexicalised, so there is no explicit morphosyntactic marking for instance of stative vs. non-stative. Thus, π_f operators as grammatical means of specifying predicate features are less common.

There are a large number of other specifiers for predicates, many of which are well-known, such as those that modify the speed (*to run quickly*), degree (*to overcook*, *to outrun*, *to hyperventilate*), or manner (*to dance beautifully*) of a predicate (Mackenzie 1998). What then are some of the other ways of modifying the sense of a predicate?

Predicate locatives, both grammatical and lexical, are predicate specifiers because they too change the sense of the predicate – *to kiss on the cheek* is different from *to kiss*. Predicate locatives are particularly common with verbs of unspecified movement. For example,

DIRECTIONAL operators are common in Qiang (Tibeto-Burman; Van Valin and LaPolla 1997: 42):

(1) a. təʁů
'throw straight up'
π_{f}-UP [f ʁů]

b. ɦaʁů
'throw straight down'
π_{f}-DOWN [f ʁů]

In English, directional satellites are common (*to rotate counter clockwise*; *to throw in an arc*) and the related REVERSIVE prefix *un-* in English could be analysed as a subtype of directional operator (*unwind*, *unscramble*, *unzip*, etc.). More common English directional operators are expressed by the prefixes *circum-*, *inter-*, *intra-*, etc. Of course, many English prefixes have limited productivity and so may not be operators, but they are nevertheless helpful illustrations of the SORTS of predicate modification that languages show.

An interesting case in Semitic languages occurs with the INTENSIVE inflection of verbs (e.g. Doron 2003 for Biblical Hebrew). Fassi Fehri (2003) notes that the term 'intensive' originated in the medieval Arabic grammatical terms *takṯiir* 'multiplicity' and *mubaalaġah* 'exaggeration', which likewise suggest a change in predicate sense rather than predication. Two examples of Biblical Hebrew Intensives are as follows:

(2) a. ʃɔ:vá:r ʃibbé:r
break\PST(3MSG) break\PST.INTS(3MSG)
'he broke' 'he broke into pieces'
(f *ʃabar*) (π_f-INTS f *ʃabar*)

b. ʃɔ:ʔá:l ʃi:ʔé:l
ask\PST(3MSG) ask\PST.INTS(3MSG)
'he asked' 'he begged'
(f *ʃaʔal*) (π_f-INTS f *ʃaʔal*)

Intensives are not limited to Semitic languages; in many languages, reduplicative morphology effects similar changes to the predicate. Even in English we find examples of reduplication effecting intensification, particularly in children's literature, such as *the man thought and thought about it*; *they ran and ran till they caught the fairies*; *I pushed and I pushed* …; and *the rabbit hippity-hopped but the goats went skippity-skip*, etc.

Reduplicative (and intensive) morphology can also indicate ITERATION (or PREDICATE QUANTIFICATION). In Slovak Romani, the suffixes *-ker-* and *-av-* indicate iteration (*phiravel* 'to carry', *phirav-ker-el* 'to carry repeatedly') and may themselves be repeated (*phir-ker-ker-el* ≈ *phirav-ker-el*; Rácová 1999). Cuvalay-Haak (1997: 46; quoting from Kristoffersen 1992: 162) suggests that the West Greenlandic infix *–sar–* is a π_f REPETITIVE marker. An example illustrates both σ_e event quantification ('every day') and π_f predicate quantification ('thoroughly tested'):[3]

(3) ullut tamaasa misilin-niqar-luar-tar-put
day every test-PASS-well-REP-DECL.3PL
'Every day (σ_e) they are thoroughly tested (π_f).'

There are two other major groups of predicate specifiers (cf. Faber and Mairal Usón (1999: 145-176). The first is the PHASAL ASPECT specifiers, such as INCEPTIVE, PROGRESSIVE, and so forth, which isolate a temporal subsection of a predicate's sense. In English, they are

indicated by phasal verbs, such as *to start to X*, *to finish Xing*, and by the Present Participle. Related to phasal aspect is PERSPECTIVAL ASPECT (Dik 1997a: 220–225), namely, the (IM)PERFECTIVE distinction. In some languages, such as English, this is lexicalised, in others, such as Polish, it is marked inflectionally on each verb. Irrespective of its expression, however, perspectival aspect affects the sense of the predicate. Of course, such so-called lexical aspect (also *Aktionsart*) combines with other elements in the clause to produce the complete tense-aspect configuration, so-called grammatical (tense-)aspect (Verkuyl 2003; Młynarczyk 2004).

The other somewhat heterogeneous group, of which the previously mentioned English Reversive is a member, contains various types of negation, reversal, transformation, and evaluation of the sense of predicates, such as those expressed by the following English Verbal prefixes: *mal-* (*malform*, *maladminister*, *malfunction*), *dis-* (*disambiguate*, *dispossess, disallow*), *de-* (*deforest, de-energise, de-emphasise*), *re-* (*rewrite*, *rephrase*, *reshape*), and so on (*anti-*, *contra-*, *counter-*, *mis-*), and so forth. They parallel the above-mentioned nominal evaluative modifiers (*quasi-*, *pseudo-*¸ *Mac-*), in that also tell the addressee to construe a meaning of the predicate that deviates in some way from the prototypical sense of the uninflected form. Included in this group is CONATION, where an attempt to undertake the action denoted by the predicate is specified. In English, this is expressed as *to try/to strive/etc to X*, although the fact that both predicates can be modified – *He tried hard to run quickly* – suggests that this construction is perceived as depicting two events (an intention and a physical effort). At the least it is a complex predication.

In sum, predicate specifiers indicate the following features of predicates: telicity, dynamicity, duration, speed, degree, manner, location, direction, intensity, quantification, phasal aspect, perspectival aspect, negation, reversal, and evaluation. Undoubtedly there are other specifiers to be included in this list.

Satellites, unlike operators, are assigned a semantic function, but this is only heuristic in the sense that because operators form a closed class in a language they can be conveniently grouped with their function implied (e.g. PAST, FUTURE, etc operators all have an implied tense function). What operators and satellites have in common is that they both exercise SCOPE over elements in interpersonal or representational structure. Nuyts (1992, summarized in Butler 2003: 106–110; cf. Butler 2003: 447–478, 502) also argues for their underlying conceptual unity, observing that satellites typically provide more SPECIFIC semantic modification than operators (e.g. *yesterday* vs. PAST).

The suggested change to FDG therefore is to place operators and satellites in the same location, to the left of the variable representing the entity type which they modify.

We have therefore dealt with the first problem: operators and satellites are both kinds of specifiers that provide further specification of the features of the ontological type they modify. There are as many classes of satellites as there are classes of ontological types. Their conceptual and functional unity is represented in the modified FDG by their adjacency and interaction.

We turn now to the second problem in FDG, its continued use of quasi-predicate logic notation.

2.2 Predicates and variables

FDG, like FG, makes extensive use of predicates. Indeed, in FDG, not only is every lexical item built from a predicate, grammatical markers of speech frames are built from "abstract predicates" (Hengeveld and Mackenzie 2006). How does this work? Every representational and interpersonal unit has the same basic structure:

(4) $(\pi_V V_i: H (V_i): \sigma_V (V_i)^n)_\Phi$

where H is either a lexical predicate, an abstract predicate, or a lower layer; and Φ is a function.

Some examples are as follows:

(5)	a. Initiation Move:	$(\pi M_i: [\ldots] (M_i))_{Init}$	H = lower layer
	b. (Exclamative) Concessive Act:	$(\text{EXCL } A_i: [\ldots] (A_i))_{Conc}$	H = lower layer
	c. Declarative Illocution:	$(\pi F_i: \text{DECL } (F_i))$	H = abstract predicate
	d. Explicit Performative:	$(\pi F_i: promise_V (F_i))$	H = lexical predicate
	e. Object:	$(\pi x_i: (\pi f_j: dog_N (f_j)) (x_i))$	H = lower layer
	f. Property:	$(\pi f_i: dog_N (f_i))$	H = lexical predicate

To illustrate, example (5e) states that the predicate dog_N is applied to the variable f_j and the resultant property f_j: dog_N (f_j) is applied to the object variable x_i. This is why the colon ':' occurs after x and f. In other words, FDG distinguishes intensional denotation, "the set of essential properties which determines the applicability of the term" (Lyons 1977: 159), represented as f: dog_N (f), from extensional denotation, "the class of things to which it is correctly applied" (Lyons 1977: 158), represented in FDG as x: (f: dog_N (f)) (x).

In Mackenzie's (pc) words, the notation is simply for "visualizing the typological generalizations emerging from analytical work". This probably explains why the elaborate system of symbols does little actual descriptive or explanatory work in the theory, notwithstanding the obvious use of parentheses to show argument satisfaction and/or scope, indices for referencing, and the like. In fact, few substantive observations appear in FDG publications that are based on (or even refer to) this elaborate semantic/interpersonal structural notation, besides observations that are obvious and that therefore could be made in the absence of such a notation. In other words, the (quasi-)formal notation is not doing the work typically done by formalisms, such as accounting for quantification, negation, possible world semantics, inferencing, and so on (for critique of the notation see Bakker 2001; Mairal Usón and Van Valin 2001; Butler 2003: 90–99; Bakker and Siewierska 2004; Escribano 2004).

One may wonder then why FDG persists with and in fact extends the FG symbolism. FDG publications provide three basic justifications for it.

First, the variables are used for tracking entities for purposes of anaphor, deixis, relative clauses, infinitival clauses, and the like. However, it is not the FDG variables *per se* that instantiate a discourse filing-system, but the indices. The subscripted indexes do the tracking work and each index's variable simply piggy-backs along for the ride, maintaining its ontological identity across utterances. This justification thus is a non-starter.

Secondly, variables are claimed to be necessary to capture the contrast in examples such as the following, in which the property *old* modifies the referent *friend* in (a) and the property *is a friend* in (b):

(6) a. an <u>old</u> friend = 'a friend who has the property of being old'
(SG x_i: (f: *friend*$_N$ (f)) (x):<u>{(f: *old*$_{Adj}$ (f))}</u>)
b. an <u>old</u> friend = 'a friend who has been a friend for a long time'
(SG x_i: (f: *friend*$_N$ (f):<u>{(f: *old*$_{Adj}$ (f))}</u>) (x))

This example illustrates the core problem of having a quasi-formal notation rather than a formal notation: in such cases the notation IS being interpreted formally, while in most cases in FDG, restriction (where, A:{B} = B restricts A) is radically underspecified and interpreted non-formally. The notation is therefore INCONSISTENTLY INTERPRETED AS FORMAL IN PLACES AND NON-FORMAL ELSEWHERE. Thus *a false friend*, *poor Johnny*, *a good knife*, *a fast typist*, despite being rendered in FDG as (x (f: *friend*$_N$ (f) (x):{f *false*$_{Adj}$ (f)}), (x (f: *knife*$_N$ (f) (x):{f *good*$_{Adj}$ (f)}), and so forth, cannot be interpreted as predication restriction in any straightforward way (Jackendoff 2002: 382–384), even despite FG's interpretation of restriction as cumulative rather than conjunctive (Dik 1997a: 132–136). They would each need a separate notation to capture their precise semantics in a predicate logic.

As a simpler alternative, a non-formal notation could be used in which A:{B} means that B modifies A IN SOME UNSPECIFIED MANNER, for as Jackendoff (2002:383) states, from a

cognitivist perspective all varieties of modification "map uniformly into the conceptual structure notation," by which he means his proposed notation for modification, equivalent in complexity to my proposed A:{B} notation. *Old friend* is accordingly written as SG x *friend*:{f *old*} – *old* restricts *friend* in some unspecified manner. The lexicon stores additional information about entities, whereby, crudely put, *oldness* matches *friend is a person* and *a person exists through time* (*has temporal extension*). The difference meanings of restriction thus arise from the meaning potentials of the lexemes, which is as we would expect.

This approach can also handle interpersonal (and evaluative) adjectives, which do not restrict the SENSE of a lexeme but rather modify in various ways THE SUBACT of referring, by expressing the evaluation by the speaker toward the referent. For example, in the phrase *poor Johnny*, f *poor* is a lexical modifier of a referential subact R:

(7) … ψ_C [C ((σ_R-f *poor*$_{Adj}$)$_{Sympathy}$ R_1)

↓

(x_2 *Johnny*$_{Np}$)$_\Phi$

Thirdly, the notation is supposedly required because one can ascribe the bare property (f: *dog*$_N$ (f)) to a referent in predicate nominal constructions. FG notates this difference in the following manner:

(8) a. <u>A painter</u> collapsed.
PST e: [f: *collapse*$_V$ (f) <u>(SG x: (f: *painter*$_N$ (f)) (x))</u>$_{Pro}$ (e)]$_e$

b. John's <u>a painter.</u>
PRES e: [<u>(f: *painter*$_N$ (f)</u> (SG x: (f: *John*$_{Np}$ (f)) (x))$_\emptyset$ (e)]$_e$

It is argued that the notation in (35) indicates that *painter* is a referred-to object in (a), x: (f: *painter*$_N$ (f)) (x), but an ascribed-property in (b), f: *painter*$_N$ (f). FDG pins this distinction on two different aspects of the denotation of the lexeme 'painter', as discussed above. The intensional denotation is predicated by the speaker in (b) and the extensional denotation – DERIVED from the intensional, as in x: (f: *painter*$_N$ (f)) (x) – is referred to by the speaker in (a), although without explicitly using the terms 'intension' and 'extension'.

However, as Lyons points out, it is the ACT OF PREDICATING which picks out the property reading:

> [W]hen we utter the sentence 'The man drinking a martini is a crook' ... we are predicating of him the lexeme 'crook'; and we can just as reasonably ask what is the denotation of the expression '(be) a crook' as we can what does 'crook' denote. The answer in both cases is the same; or, if we prefer to put it this way, the denotation of '(be) a crook' is the intension of the class whose extension is the denotatum of 'crook' (Lyons 1977: 214).

Thus the distinction that FDG wishes to capture derives from subact of ascription at the IL and not at the RL – that is, it is not the case that predicating JUST SO HAPPENS to co-occur with the intensional reading, rather it causes it.

It can simply be stated in the FDG theory that ascription (T) applied to any entity evokes an intensional/property reading. This does NOT entail, especially from a cognitive-functional perspective, that all acts of reference are BUILT UP, as it were, from intension to extension, because the first-learned/basic knowledge of a word (used in referring constructions) would presumably be its ontological type. After all, the intension of any word, even if one had thousands of entity types in the lexicon, is simply *the property of being a X*. There is nothing to be learned here other than the abstraction of properties from entities (or of kinds from types).

Similarly, the subact of referring OBJECTIFIES entities, regardless of their denotation, allowing us to refer to meetings, ideas, abstract mathematical numbers, and so forth, in

object-like ways.[4] So in the sentence *The poor are with us* the subact of referring to *poor*, typically a property, construes the referent as *poor people*.

Finally, we noted above that FDG builds extension from intension, as in (π x_i: (π f_j: dog_N (f_j)) (x_i)), an approach that ultimately rests on the view that in uttering 'dog' the speaker is uttering something like "there is a definite singular *x* such that the property *f* of being a dog applies to *x*". This seems untenable in FDG's avowed cognitive-functionalist framework, entailing as it does that within every subact of reference is lurking a subact of predication. That is, 'the dog', represented as

(9) … C (D R_1))$_C$

↓

… (SG x_2: (f_3: dog_N (f)) (x))

in fact implies

(10) … C (D R_1 (T_2)$_T$)$_R$)$_C$

↓ ↓

… (SG x_3: (f_4: dog_N (f)) (x)).

Such a view is hard to justify from a cognitive perspective. At the least, one would have to demonstrate a cognitive correlate to such an approach to term building to justify its psychological adequacy.[5]

Therefore, it is proposed to dispense with a quasi-formal notation with its binding of lexemes to variables and the concomitant colons ':' and closing variables in parentheses. Rather, each lexeme is given a variable merely as shorthand for entity type, a heuristic for descriptive purposes and not in any sense operational. Each variable stands for a conceptually/grammatically-relevant region of cognitive-semantic space (construed

extensionally by default), not a formal variable for logic. Thus *the dog* should be instead represented as D R_1 x_2 SG *dog*, and *is a dog* as T_1 x_2 *dog*. (The removal of the parts-of-speech subscript is justified in the following section.)

The notation proposed in the present paper can still represent the building blocks of the phrasal semantics of the IL/RL, namely, argument satisfaction, modification, indexing, scope, conjunction, binding, constituent functions, and so forth, and so is more than sufficient for its purposes.[6]

2.3 Parts-of-speech insertion

We now turn to the third and final problem with FDG, the insertion of parts-of-speech information into the IL/RL. This problem, however, turns out to be related to a more fundamental issue regarding how to interpret the semantics of the combined IL/RL, which FDG calls the UNDERLYING REPRESENTATION (UR). This is because the insertion of parts-of-speech is only possible with a particular understanding of what the UR represents, namely, that it represents those interpersonal/representational distinctions that are grammatically-relevant (cf. Anstey 2004).

In terms of the tripartite architecture of language (conceptualisation, syntactic encoding, expression), an architecture with compelling empirical backing from psycholinguistic research (Bock 1995; Jackendoff 1997, 1999, 2002; Levelt 1999a, b; Levelt *et al.* 1999; Rodriguez-Fornells *et al.* 2002), lexical insertion takes place in the interface between conceptual structure and syntactic structure. In FDG's UR, lexical items are ALREADY inserted, as the UR is understood as encoding only those distinctions that are grammatically-relevant. This explains why in the FDG architecture (Hengeveld and Mackenzie 2006, fc), there is an additional conceptual layer feeding the UR, an idea supported by Nuyts (1992, 2000, 2001) and Butler (2003). In effect, FDG has a QUADRIPARTITE architecture of Cognition, Interpersonal/Representational, Syntactic, Expression. The UR in FDG is precisely "the interface" between cognition and syntax.

However, I would like to suggest another way of approaching the problem: that the UR of FDG could itself be the conceptual layer if it is adjusted somewhat. This would bring the conceptual layer firmly into the domain of the grammar proper, and make it more congruent with the tripartite architecture.

The crux of the matter lies in the distinction between two views of linguistic semantics, dubbed conceptually-relevant semantics (CRS) and grammatically-relevant semantics (GRS). FDG explicitly states that the UR represents GRS (e.g. Hengeveld and Mackenzie 2005, 2006, fc). So what is the distinction between CRS and GRS and can the UR of FDG in fact be changed to represent CRS? To these questions we now turn, influenced in part by the work of Jackendoff (2002; cf. Phillips and Lau 2004).

Because Cognition manipulates Interpersonal and Representational information, clearly there is CRS for thinking and GRS for syntax and clearly not all CRS is grammatically-relevant. But as Jackendoff (2002) observes, syntax only needs coarse semantics to do its work. It would seem then that a GRAMMAR should primarily concern itself with GRS.

However, it turns out that finding the dividing line between CRS and GRS is not at all straightforward. For example, it is empirically proven that detailed lexical information interacts with production and comprehension. McRae *et al.* (1997) show that speakers are sensitive to differences between sentences such as *The policeman arrested the robber* and *The robber arrested the policeman*, because the latter sentence violates the following conventional pattern:

(11) e [f ARREST (…)$_{\text{Arrester}}$ (…)$_{\text{Arrestee}}$]

The information in example 38 is fine-grained and obviously part of CRS, but how coarse does it need to be to be sufficient for GRS? Would e [f ARREST (…)$_{\text{Ag}}$ (…)$_{\text{Pat}}$] suffice?

In an attempt to answer this question, Kemmerer, who DOES advocate the separation of CRS and GRS, conducted a series of experiments involving the order of Adjectives in

complex English Noun Phrases (2000a; see also Kemmerer 2000b; Kemmerer and Wright 2002). English Adjectives have a very strong preferred order, as in *big brown dog* versus **brown big dog*. What is significant is that the order for these preferences is dependent upon ABSTRACT lexical-functional distinctions such as DESCRIPTIVE, CLASSIFYING, SIZE, COLOUR, DIMENSIONALITY, and so forth. These distinctions ARE grammatically-relevant and thus must be visible to the syntactic module, but the adjectives they apply to must contain CRS that is not GRS, such as the differences between colours.

Kemmerer conducted experiments with sixteen left-hemisphere brain-damaged patients to see if they had intact conceptual and syntactic knowledge, but impaired knowledge of such grammatically-relevant abstract functional distinctions. In the first experiment participants were asked to judge which NP sounds more "natural" out of pairs such as the following:

(12)	the last full glass	vs.	*the full last glass
	the two Korean girls	vs.	*the Korean two girls
	a small local store	vs.	*a local small store
	an attractive red dress	vs.	*a red attractive dress

The results indicated that "the impaired subjects have a deficit in their knowledge of the semantic principles underlying prenominal adjective order" (2000a: 70). The second test demonstrated that the patients had intact conceptual knowledge about the adjectives used in the first experiment, thus they should not have problems conceptualising the referent of the noun phrase. In the third experiment, the patients had to make grammaticality judgments about fifteen noun phrase structures not related to non-atomic lexical features. Thus they had to judge between pairs such as the following:

(13) big field vs. *field big
sweet warm air vs. *air warm sweet

In this experiment the patients demonstrated a normal ability to make accurate metalinguistic judgments about grammaticality. Kemmerer concludes that there must exist separate neural areas responsible for GRS and CRS respectively.

The problem with Kemmerer's results is that although they alert us to the fact that a LOT more is grammatically-relevant than meets the eye, they do not tell us where the dividing line lies. Jackendoff (2002), in his consideration of this issue, concludes that the very act of setting a dividing line between CRS and GRS actually achieves nothing and that the pre-syntactic side of linguistic theory (i.e. UR in FDG) should be simply CRS. He argues that "little is to be gained from positing a separate level of structure for linguistic semantics […], since this level exhibits no interesting semantic constraints beyond its coarseness relative to lexical distinctions" (2002: 290).

So the issue is not that CRS and GRS are distinct, as they clearly are – we can conceptualise a vast array of things, all of which are expressed by a highly constrained syntactic inventory. Rather, the issue is, is it best to restrict (and thereby constrain and simplify) our theoretical models to GRS? What are the implications of modelling GRS vis-à-vis CRS? It is these basic questions that have not been examined carefully enough in FDG.

The fundamental problem with GRS is that it makes semantics DEPENDENT on syntax; the 'relevant' in CRS and GRS means, in fact, 'dependent'. GRS amounts to saying that the coarse semantic distinctions required for syntax are the only distinctions worthy of grammatical attention. *Ergo*, the waste-basket of pragmatics is recruited to account for all the interesting but otherwise inconsequential results of conceptual semantics à la McRae, Kemmerer, and friends. FDG struggles to incorporate such research, because it is about phenomena OUTSIDE the FDG grammar. GRS therefore tightly binds semantics and syntax and a major implication follows: one-to-one mapping from semantics-to-syntax must

dominate, as it does in all FDG (and much functionalist) work: for example, a past tense morpheme is "triggered" by a PST grammatical operator, giving the semblance of the priority of semantics over syntax. But in effect, the morphosyntax of the language dictates to the UR exactly what grammatical distinctions it can distinguish, arguably allowing syntax to covertly rule the semantic roost.

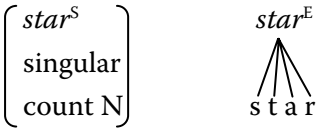
Thus, in anticipation somewhat of section 3, in which multifunctionality will be argued to bolster the preference for CRS over GRS, I propose to amend the UR of FDG to be in accord with CRS. I adopt Jackendoff's proposal that we "must consider the domain of linguistic semantics to be continuous with human conceptualization as a whole" (2002: 282), a position long advocated for FG by Nuyts (1992, 2000, 2001). However, rather than adding a separate conceptual level that functions prior to the UR, we can modify the UR so that it IS the conceptual level.

Prima facie this simply entails the removal of the parts-of-speech subscripts from lexemes in the UR, because lexical insertion does not occur in the UR. But more profoundly, this results in wholesale changes in the way the UR is understood and utilised, because it pries apart semantics and syntax, allowing each to function on its own terms.

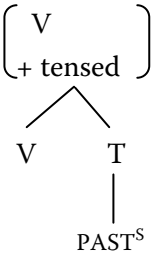
The lexicon, a tripartite architecture in miniature, contains conceptual, syntactic, and expression (phonological, orthographic, etc) information for each lexical item, from morphemes such as PAST to words such as *dog*. These three components of a lexical item can be notated as lex^{C}, lex^{S}, and lex^{E}, for conceptual, syntactic, and expression respectively, abbreviated to the bare form *lex*/MORPHEME whenever it is clear from context. Thus *lex* in the IL/RL stands for lex^{C}, but *lex* in the syntactic layer stands for lex^{S}.

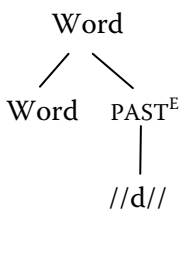
Jackendoff provides many examples of lexical items, such as *star* (2002: 131; US pronunciation) and PAST (2002: 160), adapted to the proposed format. Note that the part-of-speech is now in the syntactic (middle) column:

(14) ψ_x [x *star*^{C}]
= 'stellar body' …



(15) π_e-PAST^C e [f *lex*^{C}]
= $T_1 < T_2$ …





Mackenzie (pc) and Hengeveld (pc), in considering this idea, counter by stating that the parts-of-speech subscripts (i.e. x dog_N rather than the proposed x *dog*) indicate that this lexeme IN THIS FORM is available for inclusion in semantic structure. I do not dispute this, because obviously we produce meaningful utterances from the stock of words that we know. The subtle difference is that the UR contains the lexeme with its conceptual information (x *dog*^{C}) [IS.AN.ANIMAL; CAN.BE.DOMESTICATED; …], but that the syntactic level contains x *dog*^{S} [Noun; COUNT; etc].

This relocation of part-of-speech from UR to SL is only possible, I contend, when the prior question of CRS versus GRS is resolved in favour of CRS. Concomitantly, inserting actual syntactic words into presyntactic structure is only possible if FDG maintains its commitment to GRS.

2.4 Summary

I have suggested three further changes to FDG: (i) the recognition of the conceptual unity of operators and satellites, and their redefinition as specifiers that provide further information relevant to the ontological type they modify; (ii) the removal of the quasi-predicate logic formalism; and (iii) the insertion of lexemes as conceptual words/morphemes in the UR and

as syntactic ones in the SL, which only makes sense when the UR is understood as CRS rather than GRS.

The notational outcome of these changes is the following reworked model of the UR of FDG:

(16) ψ_M M [ψ_A A [ψ_F F [ILL (ψ_P P_S) (ψ_P P_A) [ψ_C C (ψ_T T) (ψ_R R)]$_C$]$_F$]$_A$]$_M$

ψ_Pp [ψ_e e [δ_V (δ_V)$_{SemF}{}^n$]$_e$]$_p$

where $\delta_V = \varphi_V{:}\{\varphi_V\}$ $(\varphi_V)_{SemF}{}^n$ *and* $\varphi_V = \psi_V$ v *lex.*

The utterance *The boy cried* is accordingly represented as follows, with indices used to show the relationships between the levels:

(17) M [A [F [DECL$_1$ [C (T$_3$)$_{NewFoc}$ (D$_6$ R$_4$)$_{GivTop}$]$_C$]$_F$]$_A$]$_M$

p$_2$ [π_e-PST$_5$ e [f$_6$ *cry* (π_x-SG$_7$ x$_8$ *boy*)$_{Pat}$]$_e$]$_p$

[[The$_6$ boy$_{7.8}$]$_{NP}$ [cry$_6$-PST$_5$]$_{VP}$]$_{Cl.1}$

[ðə$_6$ bɔɪ$_{7.8}$ kraɪd$_{5.6}$]$_{\phi\text{-Intonational.Unit}}$

What remains to be done is to show how multifunctionality further motivates the choice of CRS over GRS.

3. Multifunctionality

In this section we first review evidence of multifunctionality (section 4.1). and the problems it raises for GRS but not CRS (section 4.2). The adoption of CRS for FDG has the desired effect of granting (interdependent) autonomy to conceptual semantics vis-à-vis syntax. But how then are they related?

3.1 Evidence of multifunctionality

Multifunctionality is ubiquitous in language, as seen for example typically with adpositions, case markers, and nominal compounds (Haspelmath 2003; cf. Anstey 2007 for a constructional approach to English [Noun Noun] compounds).

In Semitic languages multifunctionality is observed in many ways. There are typically two main indicative verb forms, which display a bewildering array of functions, including most common tense, aspect, and modal distinctions. So tense mismatches are very common (Cuvalay-Haak 1996).

The so-called "suffix verb" of Biblical Hebrew, normally occurring as a PAST tense, occurs in certain contexts with a nonpast meaning and hence has been dubbed "prophetic perfect" (Rogland 2001: 82–83): '… and I said, "Woe is me for I will be cut off (PST)!"' (Isaiah 6:5). There is a split in such cases between morphological and semantic tense. In terms of the CRS/GRS debate, should the RL indicate here what is meant (NPST), the CRS, or what is encoded (PST), the GRS?

Again, Semitic verbs also inflect for many voice alternations (in Biblical Hebrew, for instance, Active, Mediopassive, Reflexive, Causative, Causative Passive, Intensive, and Intensive Passive), and each alternation is multifunctional. The Biblical Hebrew Reflexive is used for reflexive (*he washed himself*), anticausative (*wisdom will vanish*), benefactive (*they prayed for themselves*), estimative (*he pretends to be rich*; *he appears as a prophet*), reciprocal (*they look at one another*), and generic passive (*pains will be forgotten*). The same question emerges, should the UR simply use a REFLEXIVE operator for all these functions, in order to generate the correct morphosyntactic form (GRS), or should it model precisely the representational distinctions this form has (CRS)?

The problem, however, becomes acute when we consider cases of extreme multifunctionality, as seen in nominal compounding.

Nominal compounding in Biblical Hebrew occurs in the Construct Chain construction, in which one or more (to a limit of six) nouns occur in the so-called construct (CNST) form

before a full NP. Furthermore, most major parts of speech can be in the construct form, including adjectives, participles, prepositions, and finite verbs. Thus this construction is for nouns [N# [NP]]$_{NP}$, abbreviated as [N# NP], but more generally [X# NP].

The meaning possibilities of [X# NP] include the range of uses of the English Genitive construction, but also include a great many other possibilities. Kroeze (1997), using FG, distinguished 94 different functions from a sample of 1,247 construct chains, all expressed with the same [X# NP] construction. Some examples are listed in table 3.

Table 3. Functions of the Biblical Hebrew Construct Chain[7]

Biblical Hebrew	Construction	Relation/Attribute
bèθ ham-mélɛχ house\\CNST ART-king 'the house of the king'	$[N\# NP]_{NP}$	X BELONGS.TO Y
śif-θè ham-mélɛχ lip-F.DU\\CNST ART-king 'the lips of the king'	$[N\# NP]_{NP}$	X IS.PART.OF Y
năhàr părɔ́θ river\\CNST Euphrates 'the Euphrates river'	$[N\# NP]_{NP}$	X IS.NAMED.AS Y
ʔavn-è qɛ́laʃ stone-PL\\CNST sling 'stones for a sling'	$[N\# NP]_{NP}$	X IS.USED.BY Y
ʔɛ̆wìl śăf-ɔθ-ájim fool(CNST) lip-F-DU 'a talkative fool'	$[N\# NP]_{NP}$	X IS.CHARACTERISED.BY Y
ħălàl ħérɛv corpse\\CNST sword 'a corpse of someone killed by a sword'	$[N\# NP]_{NP}$	X IS.PRODUCED.BY.INSTRUMENT Y (BY.UNKNOWN.AGENT Z)
śimħ-àθ gíl joy-FSG\\CNST rejoicing 'exceeding joy'	$[N\# NP]_{NP}$ where N# is a synonym of NP	X IS.EMPHASISED
ʃîr haʃ-ʃir-ím song(CNST) ART-song-MPL 'the greatest song'	$[N\#_1 NP_2]_{NP}$ where $N_1 = N_2$	SUPERLATIVE.OF X
măz-è rəʃɔ́v empty-PL\\CNST hunger 'men empty due to hunger'	$[A\# NP]_{NP}$	X IS.IN.STATE.CAUSED.BY Y
ʃălòʃ meʔ-óθ three\\CNST hundred-FPL 'three hundred'	$[N\# NP]_{NP}$	X MULTIPLIES Y
jorð-è vór go.down\PROG-PL\\CNST pit 'men going down into a pit'	$[V_{PART}\# NP]_{NP}$	X IS.IN.MOTION.TOWARDS Y

3.2 The challenge of multifunctionality to GRS

The challenge that the data of table 3 poses is that there is a vast difference between having the UR represent CRS and GRS. The first view would require dozens of different relations

between the nominal components of the construct chain. The second view, the view of canonical FDG, would only require one, a radically underspecified "Associated" (Ass) relationship, as in the following:

(18) ħălàl ħérɛv
corpse\\CNST sword
'a corpse of someone slain by a sword'
SG x_1 *ħălal* (SG x_2 *ħérɛv*)$_{Ass}$

Syntax only needs to know which noun is the syntactic head and which is dependent. In this case, the summary that syntax takes of semantics is very coarse indeed.

CRS, on the other hand, would entail that the UR POTENTIALLY represents in more detail the intended meaning of each construct chain, each corresponding to the same syntactic phrase. I underline "potentially" because there is no reason why COARSE CONCEPTUAL SEMANTICS may not be appropriate at times, as for instance in the suggested underspecified approach to restriction (A:{B}). The motivation (and hence the interpretation) in each case differs however: for GRS, A (B)$_{Ass}$ is what SYNTAX REQUIRES, for CRS, if A (B)$_{Ass}$ is used, it is because that is the level of conceptual precision THE LINGUIST CHOOSES to represent. And unlike syntax, the linguist is free to adjust the level of conceptual precision.

So should the UR of FDG represent GRS or CRS? FDG as noted has opted for the GRS approach,[8] but this is problematic for the following reasons:

1. It sacrifices conceptual precision and makes semantics (broadly construed) SUBSERVIENT to syntax, a position contrary to the functional paradigm of linguistics.
2. It is UNCONSTRAINED in that the grammar fails to model what can and cannot participate in coarse semantic categories. If coarse boundaries are all the grammar has, then coarse membership of categories follows (e.g. the $A(B)_{Ass}$ for Biblical Hebrew construct chains).
3. For many-to-one semantics–syntax mapping, it fosters monosemous/prototypical analyses of language features, because multiple pathways to a single morphosyntactic feature are discouraged. Why have multiple pathways if only one meta-pathway is grammatically-relevant?
4. For one-to-many semantics–syntax mapping, it breaks down, because the grammar, being algorithmic, cannot choose the correct morphosyntactic expression if more than one option is available. How does the grammar know that PAST is PAST for regular utterances but PRES for historical present ones?

An objection can be raised against 4 and it goes to the heart of this debate. One could argue that historical present is a particular kind of interpersonal Move or Act (or higher again, Genre/Episode). In this case, a HISTORICAL PRESENT operator at that level would trigger the PRES at the syntactic. Now this of course is perfectly plausible, but the argument simply continues the GRS assumption that what the language differentiates, the UR differentiates; that is, it ASSUMES one-one function–form mapping. The premise then becomes the conclusion; *ergo*, it is a circular argument.

Back to the arguments against:

5. GRS entails a quadripartite architecture because SO MUCH happens prior to lexical insertion. That is, it actually compounds the problem, as instead of working out how conceptualisation maps to syntax, we need to work out how conceptualisation maps to GRS and how GRS maps to syntax. This is the crux of Jackendoff's (2002) argument against GRS.
6. If GRS is correct, then surely phonologically-relevant syntax must be correct as well. That is, why not simply use coarse syntax to allow phonology to do its job? Because phonologically-relevant syntax fails to do justice to syntax ON ITS OWN TERMS. The behaviours and properties of syntactic information (raising, clefting, scrambling, and so forth) mean little to phonology but a lot to syntax. *Mutatis mutandis*, GRS fails to do justice to semantics on its terms and the behaviours and properties of semantics mean a lot to semantics even if they mean little to syntax. As Levelt (1999b: 86) writes, "Syntax develops as 'the poor man's semantics' for the child to systematise the expression of semantic roles, just as phonology is 'the poor man's phonetics', a lean system for keeping track of the subtle infinitude of articulatory phonetics." Which explains probably why no one has come up with phonologically-relevant syntax.

Therefore, I propose that multifunctionality provides decisive evidence in favour of a CRS approach to semantics, in accord with Jackendoff's claim, as quoted above, that we "must consider the domain of linguistic semantics to be continuous with human conceptualization as a whole" (2002: 282). This is because GRS effectively robs semantics (both interpersonal and representational) of its necessary independence from syntax, an independence to which multifunctionality bears witness.

Many oppose the drawing of conceptualisation into the domain of grammar proper. The objections typically appeal to the "prelinguistic" nature of cognition versus the "hard facts" of syntax. Syntax is symbiotic, so the argument goes, with semantics, so we are allowed

to include semantics (of the GRS variety) on the "hard facts" side of the linguistic dividing line and leave cognition in the prelinguistic aether. But as I have argued above, cognition reaches too far down into syntax — also symbiotically as it were — for anyone to be able to bleach it out and leave anything remotely explanatory remaining. The symbiotic argument is hence cognition's appeal to be invited to the grammatical party.

Moreover, one could question whether syntax is as ontologically autonomous as it is claimed to be. The major argument for its self-sufficiency is the "coding and behavioural properties" argument, which says that we can identify phrase/clause structure X *qua* structure because X shows predictable behaviour independent of lexical content, stellar examples being relative clauses, adpositional phrases, word order constraints, and so forth. However, this independence is arguably INTERDEPENDENCE, as the generic properties of syntactic units are dependent on classes of lexemes, and these classes are precisely those divided on CONCEPTUAL grounds, as for example evidenced in Middleton *et al.*'s work on the conceptual basis of the mass–count distinction (2004).

And what if cognitive scientists eventually motivate ALL (or even the majority of) syntactic categories from conceptual distinctions? That is, the debate between CRS and GRS leaves syntax intact because it focuses on where the dividing line should be between semantics for thinking versus and semantics for syntax. But cognitive scientists (and others) are nudging this dividing line further into the "grammar" proper (grammar as traditionally understood), by providing more and more evidence that cognition encompasses ALL of semantics AND aspects of syntax, thereby leaving less and less for syntax to be autonomous over. The logic is, if whatever is conceptual is considered OUTSIDE the grammar, then more than just conceptual semantics might find itself out in the cognitive cold. The unwelcome conclusion would then be that the only pure "hard facts" would turn out to be merely the products of speaking, writing, and signing.

Putting aside then such objections, we can see that CRS recognises that cognition, syntax, and expression are all part of grammar proper, and so the task before us then is to determine the complex interdependencies between them.

4. Constructional FDG

What does all this mean for FDG? Specifically, what does the adoption of CRS mean for FDG? There is not the space to answer this in detail, so only one possible answer to this question is offered.

FDG is, with regard to its internal generative processes, in many respects like the formal grammars it claims to differ from: a rules-operating-on-words-and-morphemes approach to grammar. FDG literature is replete with the terminology of mapping from UR to syntax, of placement rules, triggers, algorithms, and so forth. This approach to grammatical organisation, known as modularism (Seuren 2004), has a necessary corollary of GRS, because one-to-one mapping greatly simplifies the algorithmic processing load. If a PAST operator TRIGGERS a PAST morpheme, there is an efficiency and simplicity that formal grammars in particular cherish.

But if the UR is made interdependent, as in CRS, how is multifunctional mapping effected? Many-to-many mapping indicates CHOICE, and a rules operating on words approach, being an algorithmic blind mechanism, is not capable of choice (Proof: all algorithmic malfunctions are hard-wired into the system via the lexicon).

A plausible solution to multifunctionality therefore is to shift the burden to the speaker, who has knowledge of MULTIPLE, PARTIALLY-OVERLAPPING UTTERANCE PATHWAYS FROM CONCEPTUALISATION TO EXPRESSION. This view of the organisation of grammatical knowledge, which privileges VERTICAL CONGLOMERATIONS of all the formal and functional information necessary for SUCCESSFUL COMMUNICATION over HORIZONTAL MODULES of all the behavioural and coding structures necessary for EFFICIENT ALGORITHMISATION, is known as CONSTRUCTION GRAMMAR (Croft 2001, 2004; Goldberg 2003; Tomasello 2003; Seuren

2004; Östman and Fried 2005; Anstey 2007). Just as the lexicon is a tripartite architecture of conceptual, syntactic, and expression – grammar in miniature – so are higher units of grammatical organisation, from phrases, idioms, clause, acts, moves, and so forth. Such an approach therefore for FDG could be called Constructional FDG (CFDG).

The claim I am making is – and here the full implications of adopting CRS come to the fore – that FDG in its present form, like the Functional Grammar of Dik, remains as a non-constructional modular approach to grammar. For example, Cornish (2005) provides an excellent analysis of the syntactic, semantic, and discourse-pragmatic features of the locative-inversion construction. Regarding the implementation in FDG he writes, "Each of the levels or modules within the grammatical Component connects with the module immediately below it via a set of mapping or interface rules, which convert the representation issuing from the higher module into that appropriate at the lower level" (Cornish 2005: 184–185). Similarly, Hannay and Kroon discuss the places of moves and acts in FDG and write, "The outcome of the interpersonal and representational levels in FDG provides the input for processes at the structural level" (Hannay and Kroon 2005: 119). FDG is explicitly modular, but I contend that what FDG has not considered is the theoretical cost of modularism particularly with respect to multifunctionality and to the constructional claims of the psychological (and acquisitional) inadequacy of modularism (see especially Tomasello 2003).

Here is not the place to rehearse the arguments for constructionism versus modularism (Tomasello 2003; Seuren 2004; Croft 2004; Anstey 2007). Rather, I have only tried to demonstrate that the inner logic of FDG and its adoption of GRS coheres strongly with a modular architecture, which in turn privileges one-to-one function-to-form analyses, analyses that the omnipresent phenomenon of multifunctionality arguably falsifies; and that the shift to CFDG and its adoption of CRS coheres strongly with a constructional architecture, which accounts satisfactorily for multifunctionality.

5. Conclusion

My purpose in presenting a reappraisal of FDG is not to fashion a brand new model of FDG. The constructional account is a natural consequence of favouring what I have called conceptually-relevant semantics over grammatically-relevant semantics, and more importantly, is further motivated by the interdependence of the conceptual-intentional semantics from syntax, most obviously seen in the phenomenon of multifunctionality.

Although the present article covers issues that are ostensibly "in house" to FDG, the questions posed about the theory are applicable to all linguistic theories – what sort of notations are appropriate? how is semantics defined? where does cognition fit in, if at all? how is multifunctionality accounted for? is the model understood as a feedthrough process progressing through horizontal modules, as it were an "imperfective" mimicry from the inside of the time course from intention to articulation, or as a collection of vertical constructions, conventionalised *Gestalts* with all the pieces required for successful communication in place (including slots for lexemes to saturate), as it were a "perfective" mimicry from the outside of the same time course?

Thus it is hoped that the proposed changes to FDG are of interest to the broader linguistic community.

Abbreviations

x=y	x forms prosodic word with y
x-y	x is morphologically adjacent to y
x.y	x and y correspond to one element in the object language
x(y)	y is expressed on x by zero
x-y\z	z is expressed by morphophonological change of y (stem)
x-y\\z	z is expressed by morphophonological change of x-y (word)
A	Act
Adj	adjective
Ag	agent (semantic function)
ART	article
Ass	associated (semantic function)
C	communicated content
Cl	clause
CNST	construct
D	definite
DECL	declarative
e	event
f	property
F	speech frame
GivTop	Given Topic
IL	interpersonal layer
ILL	abstract illocutionary predicate
INTS	intensive (verbal morphology)
M	masculine
M	move
N	noun
Np	proper noun
NP	noun phrase
NewFoc	New Focus
p	proposition
P_A	addressee

PASS	passive (voice)
Pat	patient (semantic function)
PL	plural
P_S	speaker
PST	past
R	referential subact
REP	repetitive
RL	representational layer
SemF	semantic function
SG	singular
SL	syntactic layer
t	time
T	ascriptive subact
UR	underlying representation (= IL/RL)
V	verb
VP	verbal phrase
x	object

Endnotes

[1] I would like to thank those who commented on earlier drafts: J. Lachlan Mackenzie and Kees Hengeveld (in particular for kindly sending me drafts of two chapters of Hengeveld and Mackenzie fc), Francis Cornish, Chris Butler, Miriam Taverniers, and two anonymous reviewers. Thanks also to Ray Jackendoff for discussion of parts of section 2. A longer discussion of CFDG with illustrations from Biblical Hebrew is found in Anstey 2006.

[2] In fact, Hengeveld and Mackenzie (fc) adopt just such an approach, but the theoretical underpinnings have yet to be articulated, a task to which this article contributes. Hengeveld (2004b) indicates a similar approach in presenting the NP structure in FDG as follows: Π^{R} R_{I} $[(\pi^{x}\ x_{i}\colon (\pi^{f}\ f_{i}\colon \textit{lex}_{N}\ (f_{i})\colon \sigma^{f}\ (f_{i}))\ (x_{i})\colon \sigma^{x}\ (x_{i}))]$ $(R_{I})\colon \Sigma^{R}\ (R_{I})$.

[3] The FG notation is as follows: p [e π_{f}-<u>REP</u> f *misilin*:{f *luar*} $(3PL)_{PatSubj}]_{e}$ σ_{e}-$(\textit{ullut})_{Quant}]_{p}$.

[4] That is, a subset of ψ_{x} specifies can be applied to such referents.

[5] Others have made similar criticisms that emphasize the inappropriateness of a predicate calculus in the FG model (e.g. Harder 1992). Fortescue (2004), for instance, states that the notation is psychologically inadequate for a cognitive-functional theory like FDG, because they are discordant with conceptual semantics.

[6] It is not that FDG cannot be translated into formal logic if one so desired. As Jackendoff (2002: 322) writes regarding formal versus nonformal notations, "These objections to standard notation [i.e. predicate logic, MPA] are not fatal by any means – it can, with appropriate tinkering, code the same set of distinctions. In any event I see no reason not to experiment with alternative notations in an effort to find something more perspicuous and more easily adaptable to a wide range of linguistic phenomena."

[7] The double backslash in the gloss indicates that the CONSTRUCT form effects morphophonological changes to the entire phonological word, rather than just the stem. Stem modification is indicated by a single backslash in typological notation. For example, the

first word of the final example in the table, *jorð-è* go.down\PROG-PL\\CNST, shows (i) vowel mutation of the stem that indicates Participle (\PROG) and (ii) that the CONSTRUCT form modifies stem PLUS morpheme (go.down\PROG-PL). Anstey 2005 justifies this approach in more detail.

[8] Surprisingly, Dik advocates both at the same time: "[URs] are meant to contain everything that is needed to retrieve the semantic content of the predication on the one hand [CRS; MPA], and to specify the form of that expression on the other [GRS; MPA]" (1986:11; cf. Anstey 2004:36–38).

Reference List

Anstey, Matthew P. (2002). Layers and operators revisited. *Working Papers in Functional Grammar* 77. (http://home.hum.uva.nl/fg/working_papers/WPFG77.pdf)

————. (2004). Functional Grammar from its inception. In *A new architecture for Functional Grammar*. Functional Grammar Series 24, J. Lachlan Mackenzie and María de los Ángeles Gómez-González (eds.), 23–71. Berlin: Mouton de Gruyter.

————. (2005). Towards a typological presentation of Tiberian Hebrew. *Hebrew Studies* 46. 71–128.

————. (2006). Towards a Functional Discourse Grammar analysis of Tiberian Hebrew. PhD dissertation. Vrije Universiteit, Amsterdam.

————. (2007). *Tree tigers* and *tree elephants*: A constructional account of English nominal compounds. In *Structural-functional studies in English grammar: In honour of Lachlan Mackenzie*. Studies in Language Companion Series 83, Mike Hannay and Gerard Steen (eds.), 227-256. Amsterdam: John Benjamins.

Bakker, Dik (2001). The FG expression rules: a dynamic model. *Revista Canaria de Estudios Ingleses* 42: 15–53.

Bakker, Dik and Anna Siewierska (2004). Towards a speaker model of Functional Grammar. In *A new architecture for Functional Grammar*. Functional Grammar Series 24, J. Lachlan Mackenzie and María de los Ángeles Gómez-González (eds.), 325–364. Berlin: Mouton de Gruyter.

Bock, J. Kathryn (1995). Sentence production: From mind to mouth. In *Speech, language, and communication: Handbook of perception and cognition*, Joanne L. Miller and Peter D. Eimas (eds.), 181–216. San Diego: Academic Press.

Butler, Christopher S. (2003). *Structure and function: A guide to three major structural-functional theories. Part I: Approaches to the simplex clause*. Studies in Language Companion Series 63. Amsterdam: John Benjamins.

Croft, William (2001). *Radical Construction Grammar: Syntactic theory in typological perspective*. Oxford: Oxford University Press.

———— (2004). Syntactic theories and syntactic methodology: A reply to Seuren. *Journal of Linguistics* 40, 637–654.

Cornish, Francis (2005). A cross-linguistic study of so-called 'locative inversion': Evidence for the *Functional Discourse Grammar* model. In *Morphosyntactic expression in Functional Grammar*. Functional Grammar Series 27, Casper de Groot and Kees Hengeveld (eds.). Berlin: Mouton de Gruyter.

Cuvalay-Haak, Martine (1997). *The Arabic verb. A Functional Grammar approach to verbal expressions in Classical and Modern Arabic.* Functional Grammar Series 19. Berlin: Mouton de Gruyter.

Dik, Simon C. (1986). Linguistically motivated knowledge representation. *Working Papers in Functional Grammar* 9.

———— (1997a). *The theory of Functional Grammar. Part I: The structure of the clause*. Functional Grammar Series 20. Berlin: Mouton de Gruyter.

———— (1997b). *The theory of Functional Grammar. Part II: Complex and derived constructions*. Functional Grammar Series 21. Berlin: Mouton de Gruyter.

Doron, Edit (2003). Agency and voice: The semantics of the Semitic templates. *Natural Language Semantics* 11, 1–67.

Escribano, José Luis González (2004). On the structure of terms in FG: some conceptual issues (A sympathetic outsider's view. Paper presented at the 11th International Conference for Functional Grammar, Gijón, Spain, September 2004.

Faber, Pamela B.; and Mairal Usón, Ricardo (1999). *Constructing a lexicon of English verbs*. Functional Grammar Series 23. Berlin: Mouton de Gruyter.

Fassi Fehri, Abdelkader (2003). Verbal plurality, transitivity, and causativity. In *Research in Afroasiatic Grammar II: Selected papers from the Fifth Conference on Afroasiatic Languages, Paris, 2000*, Jacqueline Lecarme (ed.), 151–185. Amsterdam: John Benjamins.

Fortescue, Michael (2004). The complementarity of the process and pattern interpretations of Functional Grammar. In *A new architecture for Functional Grammar*. Functional Grammar Series 24, J. Lachlan Mackenzie and María de los Ángeles Gómez-González (eds.), 151–178. Berlin: Mouton de Gruyter.

Goldberg, Adele E. (2003). Constructions: A new theoretical approach to language. *Trends in Cognitive Sciences* 7 (5), 219–224.

Hannay, Mike; and Kroon, Caroline (2005). Acts and the relationship between discourse and grammar. *Functions of Language* 12(1), 87–124.

Harder, Peter (1992). Semantic content and linguistic structure in Functional Grammar. On the semantics of "nounhood". In *Layered structure and reference in a functional perspective: Papers from the Functional Grammar conference in Copenhagen 1990.* Pragmatics & Beyond 23, Michael Fortescue, Peter Harder and Lars Kristoffersen (eds.), 303–327. Amsterdam: John Benjamins.

Haspelmath, Martin (2003). The geometry of grammatical meaning: Semantic maps and cross-linguistic comparison. In *The new psychology of language: Cognitive and functional approaches to language structure*, Michael Tomasello (ed.), 213–242. Mahwah, NJ: Lawrence Erlbaum.

Hengeveld, Kees (1989). Layers and operators in Functional Grammar. *Journal of Linguistics* 25, 127-157.

———— (2004a). The architecture of a Functional Discourse Grammar. In *A new architecture for Functional Grammar.* Functional Grammar Series 24, J. Lachlan Mackenzie and María de los Ángeles Gómez-González (eds.), 1-21. Berlin & New York: Mouton de Gruyter.

———— (2004b). Noun phrases in Functional Discourse Grammar. Paper given at the 11th International Conference on Functional Grammar, Gijón, Spain, 22-25 September 2004. [Forthcoming as Hengelved, Kees. Noun phrases in Functional Discourse Grammar. In *The noun phrase in Functional Discourse Grammar*, Jan Rijkhoff and D. García Velasco (eds.). Berlin: Mouton de Gruyter.]

Hengeveld, Kees; and Mackenzie, J. Lachlan (2005). Interpersonal functions, representational categories, and syntactic templates in Functional Discourse Grammar. In *Morphosyntactic expression in Functional Grammar.* Functional Grammar Series 27, Casper de Groot and Kees Hengeveld (eds.). Berlin: Mouton de Gruyter.

———— (2006). Functional Discourse Grammar. In *Encyclopedia of language and linguistics,* vol. 4, 2d ed. Keith Brown (ed.), 668-676, Oxford: Elsevier.

———— (fc). *Functional Discourse Grammar*. Oxford: Oxford University Press.

Jackendoff, Ray (1997). *The architecture of the language faculty*. Cambridge, MA: MIT Press.

———— (1999). The representational structures of the language faculty and their interactions. In *The neurocognition of language*, Colin M. Brown and Peter Hagoort (eds.), 37–79. Oxford: Oxford University Press.

———— (2002). *Foundations of language: Brain, meaning, grammar, evolution*. Oxford: Oxford University Press.

Kemmerer, David (2000a). Grammatically-relevant and grammatically irrelevant features of verb meaning can be independently impaired. *Aphasiology* 14, 997–1020.

———— (2000b). Selective impairment of knowledge underlying prenominal adjective order: Evidence for the autonomy of grammatical semantics. *Journal of Neurolinguistics* 13, 57–82.

Kemmerer, David; and Wright, Saundra K. (2002). Selective impairment of knowledge underlying *un*-prefixation: Further evidence for the autonomy of grammatical semantics. *Journal of Neurolinguistics* 15, 403-22.

Kristoffersen, Lars (1992). Derivation and inflection in a Functional Grammar of West Greenlandic. In *Layered structure and reference in a functional perspective: Papers from the Functional Grammar conference in Copenhagen 1990.* Pragmatics & Beyond 23, Michael Fortescue, Peter Harder, and Lars Kristoffersen (eds.), 143–171. Amsterdam: John Benjamins.

Kroeze, Jan (1997). Semantic relations in construct phrases of Hebrew, *Zeitschrift für Althebraistik* 10(1), 27–41.

Levelt, Willem J. M. (1999a). Producing spoken language: A blueprint of the speaker. In *The Neurocognition of Language*. Colin M. Brown and Peter Hagoort (eds.), 83–122. Oxford: Oxford University Press.

———— (1999b). Models of word production. *Trends in Cognitive Sciences.* 3(6), 223–232.

Levelt, Willem J. M.; Schriefers, Herbert; Vorberg, Dirk; Meyer, Antje S.; Pechmann, Thomas; and Havinga, Jaap (1999). The time course of lexical access in speech production: a study of picture naming. *Psychological Review* 98. 122–142.

Lyons, John (1977). *Semantics*. vol. 1. Cambridge: Cambridge University Press.

Mackenzie, J. Lachlan (1998). On referring to manners. In *English as a human language: To honour Louis Goossens*. Johan van der Auwera, Frank Durieux, and Ludo Lejeune (eds.), 241–251. Munich: Lincom Europa.

Mackenzie, J. Lachlan, and María de los Ángeles Gómez-González (eds.) (2004). *A new architecture for Functional Grammar*. Functional Grammar Series 24. Berlin: Mouton de Gruyter.

McRae, Ken; Ferretti, Todd R.; and Amyote, Liane (1997). Thematic roles as verb-specific concepts. *Language and Cognitive Processes* 12(2/3), 137–176.

Mairal Usón, Ricardo and Robert D. Van Valin, Jr (2001). What Role and Reference Grammar can do for Functional Grammar. *Revista Canaria De Estudios Ingleses* 42**:** 137–166.

Middleton, Erica L.; Wisniewski, Edward J.; Trindel, Kelly A.; and Mutsumi Imai (2004). Separating the chaff from the oats: Evidence for a conceptual distinction between count noun and mass noun aggregates. *Journal of Memory and Language* 50, 371–394.

Młynarczyk, Anna Katarzyna (2004). Aspectual pairing in Polish. PhD dissertation, University of Utrecht.

Nuyts, Jan (1992). *Aspects of a cognitive-pragmatic theory of language. On cognition, functionalism and grammar*, Pragmatics and Beyond 20. Amsterdam: John Benjamins.

——— (2000). Tensions between discourse structure and conceptual semantics: the syntax of epistemic modal expressions. *Studies in Language* 24(1), 103–135.

——— (2001). *Epistemic modality, language and conceptualisation: A cognitive-pragmatic perspective*, Human Cognitive Processing 5. Amsterdam: John Benjamins.

Östman, Jan-Ola; and Fried, Mirjam (eds.) (2005). *Construction Grammars: Cognitive grounding and theoretical extensions*, Constructional Approaches to Language 3. Amsterdam: John Benjamins.

Phillips, Colin; and Lau, Ellen (2004). Foundational issues. Review of Ray Jackendoff, 2002, Foundations of Language, Oxford: Oxford University Press. *Journal of Linguistics* 40, 571–591.

Rácová, Anna (1999). On the category of aspectuality in Slovak Romani. *Asian and African Studies* 8(1), 62–66.

Rijkhoff, Jan (2002). *The noun phrase*. Oxford Studies in Typology and Linguistic Theory. Oxford: Oxford University Press.

Rodriguez-Fornells, Antoni; Schmitt, Bernadette M.; Kutas, Marta; and Münte, Thomas F. (2002). Electrophysiological estimates of the time course of semantic and phonological encoding during listening and naming. *Neuropsychologia* 40, 778–787.

Rogland, Max (2001). Alleged non-past uses of *qatal* in Classical Hebrew. Ph.D. dissertation, Universiteit Leiden. [Published as Rogland, Max (2003). *Alleged non-past uses of* Qatal *in Classical Hebrew*, Studia Semitica Neerlandica 44. Amsterdam: Van Gorcum.]

Seuren, Pieter A. M. (2004). The importance of being modular. Review article of William Croft, *Radical Construction Grammar: Syntactic theory in typological perspective*. New York: OUP, 2001. Pp. xxviii + 416. *Journal of Linguistics* 40(3), 593–635.

Tomasello, Michael (2003). *Constructing a language: A usage-based theory of language acquisition*. Harvard University Press.

Van Valin, Robert D., Jr.; and LaPolla, Randy J. (1997). *Syntax: Structure, meaning and function*, Cambridge Textbooks in Linguistics. Cambridge: Cambridge University Press.

Verkuyl, Henk J. (2003). On the compositionality of tense: Merging Reichennach and Prior. Internet paper: http://www.let.uu.nl/~Henk.Verkuyl/personal/tense/prtw.pdf.

Vossen, Piek (1997). Grammatical and conceptual individuation of first-order nouns. In *A fund of ideas: Recent developments in Functional Grammar*, Christopher S. Butler, John H. Connolly, Richard A. Gatward and Roel M. Vismans (eds.), 113–134. Amsterdam: IFOTT.